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| OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | EXAMINER STEELMAN, MARY J | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/807,374

Applicant(s)

OTA, YUTAKA

Examiner

MARY STEELMAN

Art Unit

2191

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/ are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is in response to Claim Amendments and Remarks received 11/13/2007. Per Applicant's request, claims 1-2, 7-10, 13-14, 17, and 20 have been amended. Claims 1-20 are pending in this application.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-12 and 20 are rejected under 35 U.S.C. 101 as the claimed invention is directed to non-statutory subject matter.

In claims 1-12, a "compiler" is being recited; however, it appears that the compiler would reasonably be interpreted by one of ordinary skill in the art as software, per se. Software, per se, is not one of statutory subject matter.

In claim 20, a "system" is being recited; however, it appears that the system would reasonably be

interpreted by one of ordinary skill in the art as software, per se. Software, per se, is not one of statutory subject matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 7-10 and 17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The newly added limitation "plural kind of details of the processing operations can be defined for one intrinsic function" is not supported or described in the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashida (US Pub. # 2002/0019973 A1) in view of Goodwin et al.(US Pub. # 2003/0074654 A1), hereinafter "Goodwin".

As for claim 1, Hayashida discloses:

A compiler for generating object code from an input source program, the object code including user-defined machine instructions defined by a user, the compiler comprising: analyzing, by a syntax analyzer, whether or not an operation described in the source program conforms to grammatical rules, outputting, by the syntax analyzer, a result of the analysis as an syntax-analysis result, and associating, by the syntax analyzer, the details of the processing operations with the user-defined machine instructions and storing the associated details of the processing operations and user-defined machine instructions in an intrinsic function definition database when detecting that the combination of the instructions is a function definition of the intrinsic function which defines the details of the processing operations associated so as to be converted into the user-defined machine instruction (FIG. 3 and [0157], lines 13-20);

generating, by a code generator, machine instructions from the source program based on the syntax-analysis result of the syntax analyzer ([0157], lines 25-29 and FIG. 1); and special instructions are the corresponding user-defined machine instructions stored in the intrinsic function definition database in the case where the machine instructions generated by the code generator are associated with the details of the processing operations stored in the intrinsic function definition database (FIGs. 1 and 3 and [0157], lines 13-20).

However, Hayashida does not explicit disclose:

replacing, by a code optimizer, the machine instructions by special instructions.

On the other hand, Goodwin discloses:

replacing, by a code optimizer, the machine instructions by special instructions (FIGs. 2, 4A-4B, 5-6, and 8A-8B).

It would have been obvious to one of ordinary skill in the art at the time of invention was made to combine the teachings of Hayashida with the teachings of Goodwin by replacing, by a code optimizer, the machine instructions by special instructions in order to increase the performance of a set of applications (Goodwin, [0026], lines 6-9).

As for claim 13, the claim is rejected for the same reason as set forth in the rejection of claim

1.

As for claims 2 and 14, Hayashida discloses:

dividing, by a lexical analyzer, the operations described in the source program into tokens ([0157], lines 13-14), wherein the syntax analyzer analyzes whether or not the tokens conforms to grammatical rules, and analyzes whether or not the combination of the tokens is a function definition of the intrinsic function ([0157], lines 15-20).

As for claims 3 and 15, Hayashida discloses:

the syntax analyzer (12, FIG. 1) inputs the definition of the intrinsic function and the details of the processing operations of the intrinsic function from an intrinsic function information file (18, FIG. 1) different from the source program (1a, FIG.1).

As for claims 4-6, Hayashida discloses:

the definition of the intrinsic function includes information of parameter types and an identification name (S32 and S33, FIG. 3 and [0157], lines 60-62).

As for claims 7-10 and 17, the claims are rejected for the same reasons as set forth in the rejections of claims 1-4 and 13. In addition, Hayashida discloses:

special definition ([0157], lines 22-23) can be defined in the intrinsic function definition database relative to a single intrinsic function ([0157], lines 21-24), and Goodwin discloses:
special definition is plural definitions of details of the processing operations (FIGs. 4A-4B, 6, and 8A-8B).

As for claim 11, Hayashida discloses:

the definition of the intrinsic function and the details of the processing operations of the intrinsic function ([0157], lines 21-24) can be described by C language ([0002]).

As for claim 12, Hayashida discloses:

the definition of the intrinsic function and the details of the processing operations of the intrinsic function ([0157], lines 21-24) can be described by hardware description language ([0002]; note that hardware description language is high-level language).

As for claim 16, Hayashida discloses:

the definition of the intrinsic function including information of parameter types and an identification name are analyzed by the syntax analyzer (11, FIG. 1) and stored in the intrinsic function definition database (18, FIG. 1).

As for claim 18, Hayashida discloses:

the definition of the details of the processing operations of the intrinsic function ([0157], lines 21-24) described by C language ([0002]) is analyzed by the syntax analyzer (12, FIG. 1).

As for claim 19, Hayashida discloses:

the definition of the intrinsic function and the details of the processing operations of the intrinsic function ([0157], lines 21-24) described by hardware description language ([0002]; note that hardware description language is high-level language) is analyzed by the syntax analyzer (12, FIG. 1).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashida in view of Goodwin, and further in view of Curreri et al.(US Pat. # 6,091,896), hereinafter "Curreri".

As for claim 20, Hayashida discloses:

A program development system for developing an application program for a processor which can execute user-defined machine instructions defined by a user, the program development system comprising:

a compile apparatus for generating object code from the application program ([0157], lines 11-12) comprising

a lexical analyzer configured to divide an operation described in a source code of

the application program into tokens ([0157], lines 13-14),

a syntax analyzer configured to analyze whether or not the tokens conform to grammatical rules, output a result of the analysis as an syntax-analysis result, and associate the details of the processing operations with the user-defined machine instructions and store the associated details of the processing operations and user-defined machine instructions in an intrinsic function definition database when detecting that the combination of the instructions is a function definition of the intrinsic function which defines the details of the processing operations associated so as to be converted into the user-defined machine instruction (FIG. 3 and [0157], lines 13-20), a code generator configured to generate machine instructions from the application program based on the syntax-analysis result of the syntax analyzer ([0157], lines 25-29 and FIG. 1), and

special instructions are the corresponding user-defined machine instructions stored in the intrinsic function definition database in the case where the machine instructions generated by the code generator are associated with the details of the processing operations stored in the intrinsic function definition database (FIGs. 1 and 3 and [0157], lines 13-20).

However, Hayashida does not explicitly disclose:

a code optimizer configured to optimize the machine instructions by special

instructions; and

a simulator apparatus configured to simulate the application program

including the machine instruction output from the compile apparatus.

On the other hand, Goodwin discloses:

a code optimizer configured to optimize the machine instructions by special

instructions (FIGs. 2, 4A-4B, 5-6, and 8A-8B),

and Curreri discloses:

a simulator apparatus configured to simulate the application program including the

machine instruction output from the compile apparatus (FIGs. 1, 4, and 5A-5B).

It would have been obvious to one of ordinary skill in the art at the time of invention was made to combine the teachings of Hayashida with the teachings of Goodwin and Curreri by having

a code optimizer configured to optimize the machine instructions by special

instructions; and

a simulator apparatus configured to simulate the application program including

the machine instruction output from the compile apparatus.

The motivation of combining the teachings of Hayashida with the teachings of Goodwin and Curreri is to increase the performance of a set of applications (Goodwin, [0026], lines 6-9) and to be able to debug optimized code (Curreri, Col. 1, lines 17).

Response to Arguments

5. Regarding Applicant's remark (the fourth paragraph of Page 9) with respect to the 101 rejections, the previous 101 rejections are maintained because the newly added limitation "user-defined machine instructions" would reasonably be interpreted by one of ordinary skill in the art as software (see the above 101 rejections).

Regarding Applicant's remark (the fifth paragraph of Page 9) with respect to the 101 rejections, the previous 101 rejection is maintained because the newly added limitation "A program development system for developing an application program for a processor " would reasonably be interpreted by one of ordinary skill in the art as software (see the above 101 rejections).

Regarding Applicant's remark (the second paragraph of Page 10 through the third paragraph of Page 11) with respect to the 112 rejections, the previous 112 rejections are withdrawn here in view of the amendments to the claims.

Regarding Applicant's remark (the fourth paragraph of Page 11 through the last paragraph of Page 13) with respect to the 103(a) rejections, new art has been applied because of newly added limitations. See the rejections addressed above.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Note:

USPN 4,302,820 to Struger, translating operation code into corresponding sets of machine instructions...translated to enable the microprocessor to execute a user defined set of microprocessor machine instructions.

USPN 6,701,515 B1 to Wilson et al., a user creates a new set of user defined instructions

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary Steelman, whose telephone number is (571) 272-3704. The examiner can normally be reached Monday through Thursday, from 7:00 AM to 5:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wei Zhen can be reached at (571) 272-3708. The fax phone number for the organization where this application or proceeding is assigned: 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: 571-272-2100.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mary Steelman

01/05/2008

MARY STEELMAN
PRIMARY EXAMINER

A handwritten signature in black ink, appearing to read 'Mary Steelman', is written over the printed name and title.